NATIONAL WEATHER SERVICE
PRODUCT/SERVICE DESCRIPTION DOCUMENT (PDD)
TYPE: Official Product
DATE: April 17, 2003

GRAPHICAL TURBULENCE GUIDANCE

Part 1 - Mission Connection

1. **Product/Service Description:**
   The Graphical Turbulence Guidance (GTG) is an automatically generated turbulence product that predicts the location and intensity of turbulence over the continental United States (CONUS). The GTG was developed by the National Center for Atmospheric Research Turbulence Product Development Team, sponsored by the Federal Aviation Administration's (FAA) Aviation Weather Research Program, and implemented by the National Weather Service Aviation Weather Center (AWC) as a supplement to turbulence AIRMETs and SIGMETs.

2. **Purpose/Intented Use:**
   The purpose of the GTG is to produce a turbulence diagnostic based on current turbulence observations and forecasts of turbulence-related meteorological variables and indices.

3. **Audience:**
   The target audience for the GTG product includes the FAA and other government agencies, pilots, airline dispatchers, aviation meteorologists, and other interested aviation users in the general public.

4. **Presentation Format:**
   The GTG product is available in gridded binary (GRIB) format via NOAAPort and at the National Weather Service Telecommunications Gateway via FTP:
   ftp://ptgftp.nws.noaa.gov/SL.us008001/DC.avspt/DS.gtggb/PT.grid_DF.gr1/.

   The GTG is also available at the following AWC URL: http://aviationweather.gov/gtg/.

5. **Feedback Method:**
   Technical and policy questions, and comments concerning the Graphical Turbulence Guidance may be addressed to:

   Aviation Weather Center
   Attn: Marc J. Singer
   7220 NW 101st Terrace
   Kansas City, MO 63153-2371
   Marc.Singer@noaa.gov

Part 2 - Technical

1. **Format and Science Basis:**
   The GTG ingests the full resolution 20 km hybrid B RUC model, domestic pilot reports

(PIREPs), and one-minute lightning data to produce an upper-level clear air turbulence (CAT) predictor. The GTG uses a computational scheme which assigns a weighting function to 12 operationally used and tested turbulence forecasting tools. The ability of these tools to accurately predict turbulence (based on current PIREP observations) determines its weight. The GTG product then maps each of these tools to a common turbulence intensity scale (0-1). The GTG turbulence diagnostic is then computed from numerical weather prediction output at the assimilation time.

2. **Availability:**
   The GTG produces a 00 hour analysis every hour (0 - 23 UTC) and a 03, 06, 09, & 12 hour forecast suite every three hours (00, 03, 06, 09, 12, 15, 18, & 21 UTC). These analyses are updated in real time on the AWC webpage and are available over NOAAPort in GRIB format.

3. **Additional Information:**
   Additional information about the GTG product is available at the following URL:
   http://aviationweather.gov/gtg/info.shtml.